

Abstract

[0044] An output stage circuit is configured for enabling an output of an amplifier circuit to be pulled upwards and/or downwards to or beyond an upper power supply or below a lower power supply. The exemplary output stage circuit comprises a pair of output transistors configured to provide an output voltage, and a controlled resistive circuit. The controlled resistive element is configured to enhance the gain of the output stage circuit by modifying the dynamic impedance effect of the upper output transistor during pull-up operation, or the lower output transistor during pull-down operation. During normal operation, the controlled resistive element operates with low resistance, e.g., acts as a "short," but during the pull-up or pull-down operation the controlled resistive element can be configured to add resistance to modify the dynamic impedance of the upper or lower output transistor. As a result, an amplifier circuit including an exemplary output stage circuit can swing towards or beyond an upper and/or lower power supply with minimal gain loss for the amplifier circuit, thus allowing for low voltage processes to be utilized.